

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An automatic steering control apparatus which is carried in a ship having a positioning device for measuring a position of the ship, and outputs a command rudder angle based on a deviation of a heading of the ship from a reference course, comprising:

an input device for inputting a desired turning center position and a desired turning radius;

a memory for storing the desired turning center position and desired turning radius input by the input device; and

~~a control unit for determining a set bearing~~ a rudder angle output device for outputting a command rudder angle so that a track of the ship draws an arc around ~~a-the desired~~ turning center stored in the memory with ~~a-the desired~~ turning radius, wherein the set bearing is based on a radius deviation between the desired turning radius and a current turning radius, the current turning radius being a distance from the position of the ship measured by the ship's positioning device to the turning center, and

a rudder angle output device for outputting a command rudder angle, wherein the rudder angle is determined based on a deviation angle between the set bearing and a current ship heading measured by a bearing sensor.

2. (Currently Amended) An autopilot which is carried in a ship having a positioning device for measuring a position of the ship, and outputs a command rudder angle based on a deviation of a heading of the ship from a reference course, comprising:

an input device for inputting a desired turning center position and a desired turning radius;

a memory for storing the turning center position input by the input device; and

~~a control unit for determining a set bearing~~~~a rudder angle adjuster for adjusting a rudder~~
~~angle~~ so that a track of the ship draws an arc around at the desired turning center stored in the memory with at the desired turning radius, wherein the set bearing is based on a radius deviation between the desired turning radius and a current turning radius, the current turning radius being a distance from the position of the ship measured by the ship's positioning device to the turning center; and

a rudder angle output device for outputting a command rudder angle, wherein the rudder angle is determined based on a deviation angle between the set bearing and a current ship heading measured by a bearing sensor.

3. (Currently Amended) An automatic steering control apparatus which is carried in a ship having a positioning device for measuring a position of the ship, and outputs a command rudder angle based on a deviation of a heading of the ship from a reference course, comprising:

an input device for inputting a desired turning radius and a desired turning center position;

a memory for storing the turning radius and the turning center position input by the input device; and

~~a control unit for determining a set bearing~~~~a rudder angle output device for outputting a~~
~~command rudder angle~~ so that a distance from the position of the ship measured by the ship's positioning device to a turning center stored in the memory, approaches the turning radius stored in the memory; and

~~wherein the~~ rudder angle output device ~~outputs for outputting~~ a command rudder angle so as to adjust a rudder angle so that a track of the ship draws an arc around the turning center with the turning radius from the time when the distance from the position of the ship to the desired turning center becomes substantially equal to the turning radius, wherein the rudder angle is determined based on a deviation angle between the set bearing and a current ship heading measured by a bearing sensor.

4. (Currently Amended) An autopilot which is carried in a ship having a positioning device for measuring a position of the ship, and outputs a command rudder angle based on a deviation of a heading of the ship from a reference course, comprising:

an input device for inputting a desired turning radius and a desired turning center position;

a memory for storing the turning radius and the turning center position input by the input device; and

a control unit for determining a set bearing~~a rudder angle adjuster for adjusting a rudder angle~~ so that a distance from the position of the ship measured by the ship's positioning device to a turning center stored in the memory, approaches the turning radius stored in the memory; and

~~wherein the~~ rudder angle adjuster that adjusts a rudder angle so that a track of the ship draws an arc around the turning center with the turning radius from the time when the distance from the position of the ship to the turning center becomes substantially equal to the turning radius, wherein the rudder angle is determined based on a deviation angle between the set bearing and a current ship heading measured by a bearing sensor.

5. (Original) The autopilot according to claim 2, wherein the input device can input a desired turning direction, the memory stores the turning direction input by the input device, and the rudder angle adjuster adjust a rudder angle so that the ship turns in the turning direction stored in the memory.

6. (Previously Presented) The automatic control apparatus according to claim 3, comprising an interrupt controller for independently changing the turning direction, the turning radius and the turning center position stored in the memory.

7. (Currently Amended) An autopilot which is carried in a ship having a positioning device for measuring a position of the ship, and outputs a command rudder angle based on a deviation of a heading of the ship from a reference course, comprising:

an input device for inputting a desired turning direction, a desired turning radius, and a desired turning center position;

a memory for storing the turning direction, the turning radius and the turning center position input by the input device; ~~and~~

a control unit ~~a rudder angle adjuster~~ for obtaining a straight line connecting the position of the ship measured by the ship's positioning device and a turning center stored in the memory for storing the turning center position, obtaining an intersection of the straight line and a turning circle drawn around the turning center stored in the memory with the turning radius stored in the memory, obtaining a tangent to the turning circle at the intersection, calculating a distance difference between the position of the ship and the intersection, and ~~adjusting a rudder~~

~~angledetermining a set bearing~~ so that a course direction of the ship approaches the turning direction of the tangent stored in the memory; and,

a rudder angle output device for outputting a command rudder angle, wherein the rudder angle is determined based on a deviation angle between the set bearing and a current ship heading measured by a bearing sensor.